

PHYCOLOGICAL CONTRIBUTIONS, VII

BY  
WILLIAM ALBERT SETCHELL  
AND  
NATHANIEL LYON GARDNER

UNIVERSITY OF CALIFORNIA PUBLICATIONS IN BOTANY  
Vol. 13, No. 1, pp. 1-13

UNIVERSITY OF CALIFORNIA PRESS  
BERKELEY, CALIFORNIA  
1924

UNIVERSITY OF CALIFORNIA PUBLICATIONS

Note.—The University of California Publications are offered in exchange for the publications of learned societies and institutions, universities and libraries. Complete lists of all the publications of the University will be sent upon request. For sample copies, lists of publications, and other information, address the MANAGER OF THE UNIVERSITY PRESS, BERKELEY, CALIFORNIA, U.S.A. All matter sent in exchange should be addressed to THE EXCHANGE DEPARTMENT, UNIVERSITY LIBRARY, BERKELEY, CALIFORNIA, U.S.A.

Publications of the University of California Press may be obtained from The Cambridge University Press, Fetter Lane, London, E. C. 4, England, to which orders originating in Great Britain and Ireland should be sent.

BOTANY.—W. A. Setchell and R. M. Holman, Editors. Price per volume, \$3.50 (vol. 5, \$6.00); beginning with volume 6, \$5.00. Volumes I, II, III, IV, V, VI, VII, and IX completed. Volumes VIII, X, XI, XII, and XIII in progress.

Cited as Univ. Calif. Publ. Bot.

Vol. 5. 1912-1922.

1. Studies in <i>Nicotiana</i> . I, by William Albert Setchell. Pp. 1-86. December, 1912 .....	\$1.25
2. Quantitative Studies of Inheritance in <i>Nicotiana</i> Hybrids. I, by Thomas Harper Goodspeed. Pp. 87-168, plates 1-28. December, 1912 .....	1.00
3. Quantitative Studies of Inheritance in <i>Nicotiana</i> Hybrids. II, by Thomas Harper Goodspeed. Pp. 169-188, plates 29-34. January, 1913 .....	.20
4. On the Partial Sterility of <i>Nicotiana</i> Hybrids made with <i>N. sylvestris</i> as a Parent, by Thomas Harper Goodspeed. Pp. 189-198. March, 1913 .....	.10
5. Notes on the Germination of Tobacco Seed. I, by Thomas Harper Goodspeed. Pp. 199-222. May, 1913 .....	.25
6. Quantitative Studies of Inheritance in <i>Nicotiana</i> Hybrids. III, by Thomas Harper Goodspeed. Pp. 223-231. April, 1915 .....	.10
7. Notes on the Germination of Tobacco Seed. II, by Thomas Harper Goodspeed. Pp. 233-248. June, 1915 .....	.15
8. Parthenogenesis, Parthenocarpy and Phenospermy in <i>Nicotiana</i> , by Thomas Harper Goodspeed. Pp. 249-272, plate 35. July, 1915 .....	.25
9. On the Partial Sterility of <i>Nicotiana</i> Hybrids made with <i>N. sylvestris</i> as a Parent. II, by T. H. Goodspeed and A. H. Ayres. Pp. 273-292, plate 36. October, 1916 .....	.20
10. On the Partial Sterility of <i>Nicotiana</i> Hybrids made with <i>N. sylvestris</i> as a Parent. III, An Account of the Mode of Floral Abscission in the F <sub>1</sub> Species Hybrids, by T. H. Goodspeed and J. N. Kendall. Pp. 293-299. November, 1916 .....	.05
11. The Nature of the F <sub>1</sub> Species Hybrids between <i>Nicotiana sylvestris</i> and Varieties of <i>Nicotiana Tabacum</i> , with Special Reference to the Conception of Reaction System Contrasts in Heredity, by T. H. Goodspeed and K. E. Clausen. Pp. 301-346, plates 37-48. January, 1917 .....	.45
12. Abscission of Flowers and Fruits in the Solanaceae, with Special Reference to <i>Nicotiana</i> , by John N. Kendall. Pp. 347-428, 10 text figures, plates 49-53. March, 1918 .....	.85
13. Controlled Pollination in <i>Nicotiana</i> , by Thomas Harper Goodspeed and Pirie Davidson. Pp. 429-434. August, 1918 .....	.10
14. An Apparatus for Flower Measurement, by T. H. Goodspeed and R. E. Clausen. Pp. 435-437, plate 54, 1 figure in text. September, 1918 .....	.05
15. Note on the Effects of Illuminating Gas and Its Constituents in Causing Abscission of Flowers in <i>Nicotiana</i> and <i>Citrus</i> , by T. H. Goodspeed, J. M. McGee and R. W. Hodgson. Pp. 439-450. December, 1918 .....	.10
16. Notes on the Germination of Tobacco Seed. III, Note on the Relation of Light and Darkness to Germination, by T. Harper Goodspeed. Pp. 451-455. April, 1919 .....	.05
17. Inheritance in <i>Nicotiana Tabacum</i> . I, A Report on the Results of Crossing Certain Varieties, by William Albert Setchell, Thomas Harper Goodspeed, and Roy Elwood Clausen. Pp. 457-582, 2 figures in text, plates 55-85. April, 1922 .....	1.75

UNIVERSITY OF CALIFORNIA PUBLICATIONS IN BOTANY

Vol. 13, No. 1, pp. 1-13

Issued October 27, 1924

THE UNIVERSITY OF CALIFORNIA PRESS  
BERKELEY, CALIFORNIA

---

THE CAMBRIDGE UNIVERSITY PRESS  
FETTER LANE, LONDON, E. C., 4  
ENGLAND

PHYCOLOGICAL CONTRIBUTIONS, VII

BY  
WILLIAM ALBERT SETCHELL  
AND  
NATHANIEL LYON GARDNER

# PHYCOLOGICAL CONTRIBUTIONS, VII

BY

WILLIAM ALBERT SETCHELL AND NATHANIEL LYON GARDNER

In anticipation of the publication of the Melanophyceae as the third part of *The Marine Algae of the Pacific Coast of North America*, the manuscript of which has now been completed by us, we are publishing here all of the new species which we have discovered and worked out in this group up to date. The illustrations of practically all of them will appear later for the first time in the general work.

## *Sphacelaria subfusca* sp. nov.

Filamentis erectis flocculos fuscescentes prope 0.5 mm. aut supra altos formantibus, alterne sed irregulariter ramosis, inferne inter cellulas superficiales hostis per ramellis rhizoideis crassis curtisque penetrantibus haud disem formantibus; articulis partitiones verticales primarias ostendentibus, 24–40 $\mu$  altis, 40–50 $\mu$  crassis; pilis regulariter adeuntibus et frequentissimis, solitariis, seriatis, oppositis secundisve, usque ad cellulas 8 in longitudine, circa 15 $\mu$  diam.; propagulis gracilibus, 2–3 radiis gracilentibus indutis, pedicello longitudine 8–12-cellulato, superne 3–4 cellulas a latere viso septa verticalia ostendente, 24 $\mu$  diam. ad basim, leviter attenuato; radiis 4–9-cellulatis, ad apicem haud aut leviter attenuatis; zoosporangiis gametangiisque adhuc ignotis.

Growing on various species of algae. Extending from Alaska (Sitka) to southern California (Redondo).

*Sphacelaria subfusca* is closely related to *S. fusca* (Huds.) Ag. but differs from that species in its basal portion, in being shorter and narrower, and in certain details in the structure of the propagula. It is intermediate between *S. fusca* (Huds.) Ag. and *S. furcigera* Kuetz.

## *Ectocarpus Parksii* sp. nov.

Frondebis 5–7 em. altis, dense caespitosis, flaccidis; filamentis primariis frondium erectarum inferne 34–40 $\mu$  diam., superne levissime attenuatis, copiose et alterne ramosis, basim levissime corticatis; ramis ramulisque progressis in diam. reductis, longis et superne levissime attenuatis, haud in pilis terminantibus; ramulis ultimis 10–15 $\mu$  diam., cellula terminali 5–7 $\mu$  diam.; cellulis cylindricis usque ad levissime doliiformibus, in filamentis primariis 40–70 $\mu$  longis, superne quadratis usque ad subquadratis; chlorophoris numerosis, irregulariter taeniae-

formibus in ramulis dense aggregatis et plus minusve connectis, inferne in filamentis primariis disciformibus et liberis; gametangiis vulgo sparsis, sessilibus, rectis aut lente superne arcuatis, vulgo in ramulis subterminalibus et terminalibus positis, secundis, 4-10-seriatis, interdum solitariis, truncato-fusiformibus usque ad subconicis, 35-45 $\mu$  longis, 18-22 $\mu$  latis.

Growing on *Gracilaria confervoides* (L.) Grev. in a small cove, San Francisco Bay, northeast of Tiburon, Marin County, California. Type, Herb. Univ. Calif., no. 229728, collected by H. E. Parks in May.

#### *Ralfsia californica* sp. nov.

Thallis complanatis, crustaceis, circumferentia orbicularibus usque ad irregularibus, arete ad substratum sine rhizoideis per superficiem inferiorem totam adhaerentibus, 280-350 $\mu$  crassis, 2-4 cm. latis, atrofuscis; strato basali parenchymatoideo 8-12 cellularum in seriebus verticalibus ordinatorum composito; zoosporangiis numerosis, clavatis in basim paraphysium positis, regulariter per partes centrales frondium sparsis, 80-95 $\mu$  (usque ad 140 $\mu$ ) longis, 16-22 $\mu$  (usque ad 32 $\mu$ ) crassis; gametangiis adhuc ignotis; paraphysibus cylindraceo usque ad leviter clavatis, 180-220 $\mu$  longis, superne 9-11 $\mu$  crassis, pilis adhuc ignotis.

Growing on smooth pebbles and rock ledges in the upper sublittoral belt, and in tide pools in the littoral belt. Central California.

This species of *Ralfsia* is closely related to *R. clavata* (Carm.) Crouan and up to date has passed for that species on our coast. Careful comparison with authentic material of *R. clavata* reveals differences sufficiently marked to warrant separating our west coast plant from it.

#### *Ralfsia hesperia* sp. nov.

Thallis complanatis, coriaceis, periphere orbiculatis, ad substratum per superficiem inferiorem arete adhaerentibus, interdum ramellos rhizoideos producentibus, 3-4 cm. diam., 1-1.5 mm. crassis, concentricis zonatis, dilute luteo-fuscis, siccitate atro-fuscis; paraphysibus 290-360 $\mu$  longis levissime clavatis, 9-12-cellulatis, apice 8-11 $\mu$  crassis, superne chlorophoris dense impletis, inferne chlorophoris paucis; cellulis paraphysium inferne 7-9-plo longioribus, superne 2-3-plo longioribus quam latis; soris amplis, frequenter confluentibus; zoosporangiis late clavatis, 120-140 $\mu$  (usque ad 180 $\mu$ ) longis, 28-34 $\mu$  latis; gametangiis adhuc ignotis.

Growing on rocks in the upper littoral belt. Central California. Type, Setchell, no. 1570 (Herb. Univ. Calif. no. 99502). December.

*Ralfsia hesperia* and *R. verrucosa* seem to be of close affinity. The former is thicker but smaller in diameter and has larger zoosporangia and paraphyses than the latter.

formibus in ramulis dense aggregatis et plus minusve connectis, inferne in filamentis primariis disciformibus et liberis; gametangiis vulgo sparsis, sessilibus, rectis aut lente superne arcuatis, vulgo in ramulis subterminalibus et terminalibus positis, secundis, 4-10-seriatis, interdum solitariis, truncato-fusiformibus usque ad subeonicis, 35-45 $\mu$  longis, 18-22 $\mu$  latis.

Growing on *Gracilaria confervoides* (L.) Grev. in a small cove, San Francisco Bay, northeast of Tiburon, Marin County, California. Type, Herb. Univ. Calif., no. 229728, collected by H. E. Parks in May.

***Ralfsia californica* sp. nov.**

Thallis complanatis, crustaceis, circumferentia orbicularibus usque ad irregularibus, arete ad substratum sine rhizoideis per superficiem inferiorem totam adhaerentibus, 280-350 $\mu$  crassis, 2-4 cm. latis, atrofuseis; strato basali parenchymatoideo 8-12 cellularum in seriebus verticalibus ordinatorum composito; zoosporangiis numerosis, clavatis in basim paraphysium positis, regulariter per partes centrales frondium sparsis, 80-95 $\mu$  (usque ad 140 $\mu$ ) longis, 16-22 $\mu$  (usque ad 32 $\mu$ ) crassis; gametangiis adhuc ignotis; paraphysibus cylindraeco usque ad leviter clavatis, 180-220 $\mu$  longis, superne 9-11 $\mu$  crassis, pilis adhuc ignotis.

Growing on smooth pebbles and rock ledges in the upper sublittoral belt, and in tide pools in the littoral belt. Central California.

This species of *Ralfsia* is closely related to *R. clavata* (Carm.) Crouan and up to date has passed for that species on our coast. Careful comparison with authentic material of *R. clavata* reveals differences sufficiently marked to warrant separating our west coast plant from it.

***Ralfsia hesperia* sp. nov.**

Thallis complanatis, coriaceis, periphere orbiculatis, ad substratum per superficiem inferiorem arete adhaerentibus, interdum ramellos rhizoideos producentibus, 3-4 cm. diam., 1-1.5 mm. crassis, concentricè zonatis, dilute luteo-fuseis, siccitate atro-fuseis; paraphysibus 290-360 $\mu$  longis levissime clavatis, 9-12-cellulatis, apice 8-11 $\mu$  crassis, superne chlorophoris dense impletis, inferne chlorophoris paucis; cellulis paraphysium inferne 7-9-plo longioribus, superne 2-3-plo longioribus quam latis; soris amplis, frequenter confluentibus; zoosporangiis late clavatis, 120-140 $\mu$  (usque ad 180 $\mu$ ) longis, 28-34 $\mu$  latis; gametangiis adhuc ignotis.

Growing on rocks in the upper littoral belt. Central California. Type, Setchell, no. 1570 (Herb. Univ. Calif. no. 99502). December.

*Ralfsia hesperia* and *R. verrucosa* seem to be of close affinity. The former is thicker but smaller in diameter and has larger zoosporangia and paraphyses than the latter.

# PHYCOLOGICAL CONTRIBUTIONS, VII

BY

WILLIAM ALBERT SETCHELL AND NATHANIEL LYON GARDNER

---

In anticipation of the publication of the Melanophyceae as the third part of *The Marine Algae of the Pacific Coast of North America*, the manuscript of which has now been completed by us, we are publishing here all of the new species which we have discovered and worked out in this group up to date. The illustrations of practically all of them will appear later for the first time in the general work.

## **Sphacelaria subfusca** sp. nov.

Filamentis erectis flocculos fuscescentes prope 0.5 mm. aut supra altos formantibus, alterne sed irregulariter ramosis, inferne inter cellulas superficiales hostis per ramellis rhizoideis crassis curtisque penetrantibus haud discum formantibus; articulis partitiones verticales primarias ostendentibus, 24–40 $\mu$  altis, 40–50 $\mu$  crassis; pilis regulariter adeuntibus et frequentissimis, solitariis, seriatis, oppositis secundisve, usque ad cellulas 8 in longitudine, circa 15 $\mu$  diam.; propagulis gracilibus, 2–3 radiis gracilentibus indutis, pedicello longitudine 8–12-cellulato, superne 3–4 cellulas a latere viso septa verticalia ostendente, 24 $\mu$  diam. ad basim, leviter attenuato; radiis 4–9-cellulatis, ad apicem haud aut leviter attenuatis; zoosporangiis gametangiisque adhuc ignotis.

Growing on various species of algae. Extending from Alaska (Sitka) to southern California (Redondo).

*Sphacelaria subfusca* is closely related to *S. fusca* (Huds.) Ag. but differs from that species in its basal portion, in being shorter and narrower, and in certain details in the structure of the propagula. It is intermediate between *S. fusca* (Huds.) Ag. and *S. furcigera* Kuetz.

## **Ectocarpus Parksii** sp. nov.

Frondebis 5–7 cm. altis, dense caespitosis, flaccidis; filamentis primariis frondium erectarum inferne 34–40 $\mu$  diam., superne levissime attenuatis, copiose et alterne ramosis, basim levissime corticatis; ramis ramulisque progressis in diam. reductis, longis et superne levissime attenuatis, haud in pilis terminantibus; ramulis ultimis 10–15 $\mu$  diam., cellula terminali 5–7 $\mu$  diam.; cellulis cylindricis usque ad levissime doliiformibus, in filamentis primariis 40–70 $\mu$  longis, superne quadratis usque ad subquadratis; chlorophoris numerosis, irregulariter taeniae-



***Leathesia nana* sp. nov.**

Thallis solidis, sphaericis, 500–800 $\mu$  (usque ad 1.3 mm.) diam., atro-fuscis; cellulis centralibus subsphaericis, 40–55 $\mu$  diam.; paraphysibus 30–40 $\mu$  longis, 3–4-cellulatis, cellulis terminalibus tumidis, subsphaericis, 10–11 $\mu$  diam.; pilis 300–400 $\mu$  longis, 4–5 $\mu$  diam., sparsis, haud fasciculatis; gametangiis 4–5-locellatis, locellis uniseriatis, 3.5–4.5 $\mu$  diam.; zoosporangiis adhuc ignotis.

Growing on the leaves of *Phyllospadix* near the outer ends. Monterey, California. Type, Setchell, no. 5439b. June.

***Leathesia amplissima* sp. nov.**

Thallis cavis, primo sub-globosis deinde irregularibus, late affixis, partibus centralibus ultimo disintegrantibus, 3–8 cm. diam., luteo-fuscis; cellulis interioribus hyalinis, comparate magnis, compactis et compresso-angulatis, prope superficiem radiantibus et parvioribus; pilis singulis, supra superficiem totam liberam sparsis, 11–13 $\mu$  diam.; paraphysibus clavatis, inferne longe attenuatis, 55–65 $\mu$  longis, basi 4–7 $\mu$  diam., apice 7–12 $\mu$  diam., 4–5-cellulatis; chlorophoris dense aggregatis; zoosporangiis ovoideis usque ad ellipsoideis, 38–46 $\mu$  longis, 22–28 $\mu$  crassis; gametangiis adhuc ignotis.

Growing on rocks and on other small algae in the lower littoral and in the upper sublittoral belts. Central California (Pacific Grove). Type, Gardner, no. 4737. June.

The chief distinction between this species of *Leathesia* and *L. difformis* (L.) Aresch. is to be found in the histological structure of the two species.

***Punctaria hesperia* sp. nov.**

Frondebis 1.5–2.5 cm. altis, 5–10 mm. latis, solitariis aut pauci-aggregatis, apice obtusis, basi in stipitem brevissimum attenuatis, 35–50 $\mu$  (usque ad 80 $\mu$ ) crassis, cellulis 4–6-stratosis, duobus mediis multo majoribus quam corticalibus; cellulis corticalibus parietibus tenuibus, superficie 4–5-angulatis, 18–22 $\mu$  diam., chlorophoras parietales, discoideas aut parvo-taeniatus includentibus; cellulis medullaribus parietibus tenuibus, arete adhaerentibus longioribus latoribusque quam crassis chlorophoras paucas discoideas includentibus; zoosporangiis numerosis, inter gametangia supra superficies utras frondium sparsis; gametangiis numerosissimis, iterum dense positis iterumque sine ordine sparsis; pilis exsertis delicatissimis, paucis aggregatis, mox deciduis.

Growing on *Phyllospadix*. Pacific Grove, California. Type, Gardner, no. 4749a (Herb. Univ. Calif. no. 229727). June.

As far as is known at present, this species does not seem to be abundant or widely distributed. The plants are small and fruit very abundantly.

**Punctaria fissilis** sp. nov.

Frondibus fragilibus, flaccidis, liguliformibus, 12–15 cm. altis, 10–15 mm. latis, 65–70 $\mu$  crassis, basi in stipitem proprium gracilem, 10–14 $\mu$  longum attenuatis, per discum parvum parenchymatoideum affixis; dilute fusciscentibus, plus minusve in lacinias lineares profunde laceratis, cellulis 4-stratosis, magnitudine mox fere aequalibus, in seriebus plus minusve longitudinalibus ordinatis, parietibus eorum tenuibus et chlorophoris parietalibus, parvissimis et discoideis; zoosporangiis gametangiisque adhuc ignotis; pilis paucis aggregatis.

Port Clarence, Alaska. Type, Herb. Univ. Calif., no. 207083.

**Punctaria occidentalis** sp. nov.

Frondibus moderate rigidis lineari-lanceolatis aut oblongo-lanceolatis usque ad late ellipsoideis, vulgo basim in stipitem brevem circa 5 mm. longum, a disco parvo affixum, attenuatis, 1.5–2 dm. altis, 3–10 cm. latis, 40–180 $\mu$  crassis, marginibus undulatis et crasse plicatis, dilute fusciscentibus, dum ad aerem expositis mox viridiscenscentibus, cellulis 2–7-stratosis, mediis crassioribus, gradatim prope margines diminuendis; cellulis medullaribus maximis ad superficies magnitudine parvo decrescentibus, cellulis corticalibus magnitudine minimis; zoosporangiis cuboideis usque ad subsphaericis, supra superficies utras sine ordine sparsis, 30–40 $\mu$  (usque ad 70 $\mu$ ) diam., superficie externa lente convexa; gametangiis numerosis, supra superficies utras sine ordine inter zoosporangia sparsis et vulgo dimidio longitudinis suorum projicientibus; pilis ignotis.

Growing on *Zostera* in the upper sublittoral belt. Monterey, California.

*Punctaria latifolia* Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 873; Tilden, Amer. Alg. (Exsicc.), no. 355.

**Punctaria chartacea** sp. nov.

Frondibus membranaceis, plus minusve bullosis, chartaceis, lineariibus usque ad late ellipticis, basi frequenter cordatis, marginibus gracili fimbriatis 25–35 cm. (usque ad 50 cm.) longis, 8–12 cm. (usque ad 30 cm.) latis, maturitate 90–120 $\mu$  crassis, per discum minutissimum affixis, atrofuscis, siccitate non discolorantibus, ad chartam siccitate non adhaerentibus; cellulis 6–7-stratosis, superficialibus multo parvioribus; parietibus cellularum crassis, dilute fusciscentibus, lacunis intercellularibus inter cellulas medullares immixtis; zoosporangiis gametangiisque adhuc ignotis.

Growing on eel grass in the lower littoral and upper sublittoral belts. Sitka, Alaska. Type, Gardner, no. 3923 (Herb. Univ. Calif. no. 229729). July.

***Punctaria fissilis* sp. nov.**

Frondebis fragilibus, flaccidis, liguliformibus, 12–15 cm. altis, 10–15 mm. latis, 65–70 $\mu$  crassis, basi in stipitem proprium gracilem, 10–14 $\mu$  longum attenuatis, per discum parvum parenchymatoideum affixis; dilute fusciscentibus, plus minusve in lacinias lineares profunde laceratis, cellulis 4-stratosi, magnitudine mox fere aequalibus, in seriebus plus minusve longitudinalibus ordinatis, parietibus eorum tenuibus et chlorophoris parietalibus, parvissimis et discoideis; zoosporangiis gametangiisque adhuc ignotis; pilis paucis aggregatis.

Port Clarence, Alaska. Type, Herb. Univ. Calif., no. 207083.

***Punctaria occidentalis* sp. nov.**

Frondebis moderate rigidis lineari-lanceolatis aut oblongo-lanceolatis usque ad late ellipsoideis, vulgo basim in stipitem brevem circa 5 mm. longum, a disco parvo affixum, attenuatis, 1.5–2 dm. altis, 3–10 cm. latis, 40–180 $\mu$  crassis, marginibus undulatis et crasse plicatis, dilute fusciscentibus, dum ad aerem expositis mox viridiscenscentibus, cellulis 2–7-stratosi, mediis crassioribus, gradatim prope margines diminuendis; cellulis medullaribus maximis ad superficies magnitudine parvo decreascentibus, cellulis corticalibus magnitudine minimis; zoosporangiis cuboideis usque ad subsphaericis, supra superficies utras sine ordine sparsis, 30–40 $\mu$  (usque ad 70 $\mu$ ) diam., superficie externa lente convexa; gametangiis numerosis, supra superficies utras sine ordine inter zoosporangia sparsis et vulgo dimidio longitudinis suorum proicientibus; pilis ignotis.

Growing on *Zostera* in the upper sublittoral belt. Monterey, California.

*Punctaria latifolia* Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 873; Tilden, Amer. Alg. (Exsicc.), no. 355.

***Punctaria chartacea* sp. nov.**

Frondebis membranaeaeis, plus minusve bullosis, chartaceis, lineari-bus usque ad late ellipticis, basi frequenter cordatis, marginibus gracili fimbriatis 25–35 cm. (usque ad 50 cm.) longis, 8–12 cm. (usque ad 30 cm.) latis, maturitate 90–120 $\mu$  crassis, per discum minutissimum affixis, atrofuscis, siccitate non discolorantibus, ad chartam siccitate non adhaerentibus; cellulis 6–7-stratosi, superficialibus multo parvioribus; parietibus cellularum crassis, dilute fusciscentibus, lacunis intercellularibus inter cellulas medullares immixtis; zoosporangiis gametangiisque adhuc ignotis.

Growing on eel grass in the lower littoral and upper sublittoral belts. Sitka, Alaska. Type, Gardner, no. 3923 (Herb. Univ. Calif. no. 229729). July.

***Leathesia nana* sp. nov.**

Thallis solidis, sphaericis, 500–800 $\mu$  (usque ad 1.3 mm.) diam., atro-fuscis; cellulis centralibus subsphaericis, 40–55 $\mu$  diam.; paraphysibus 30–40 $\mu$  longis, 3–4-cellulatis, cellulis terminalibus tumidis, subsphaericis, 10–11 $\mu$  diam.; pilis 300–400 $\mu$  longis, 4–5 $\mu$  diam., sparsis, haud fasciculatis; gametangiis 4–5-locellatis, locellis uniseriatis, 3.5–4.5 $\mu$  diam.; zoosporangiis adhuc ignotis.

Growing on the leaves of *Phyllospadix* near the outer ends. Monterey, California. Type, Setchell, no. 5439b. June.

***Leathesia amplissima* sp. nov.**

Thallis cavis, primo sub-globosis deinde irregularibus, late affixis, partibus centralibus ultimo disintegrantibus, 3–8 cm. diam., luteo-fuscis; cellulis interioribus hyalinis, comparate magnis, compactis et compresso-angulatis, prope superficiem radiantibus et parvioribus; pilis singulis, supra superficiem totam liberam sparsis, 11–13 $\mu$  diam.; paraphysibus clavatis, inferne longe attenuatis, 55–65 $\mu$  longis, basi 4–7 $\mu$  diam., apice 7–12 $\mu$  diam., 4–5-cellulatis; chlorophoris dense aggregatis; zoosporangiis ovoideis usque ad ellipsoideis, 38–46 $\mu$  longis, 22–28 $\mu$  crassis; gametangiis adhuc ignotis.

Growing on rocks and on other small algae in the lower littoral and in the upper sublittoral belts. Central California (Pacific Grove). Type, Gardner, no. 4737. June.

The chief distinction between this species of *Leathesia* and *L. difformis* (L.) Aresch. is to be found in the histological structure of the two species.

***Punctaria hesperia* sp. nov.**

Frondibus 1.5–2.5 cm. altis, 5–10 mm. latis, solitariis aut pauci-aggregatis, apice obtusis, basi in stipitem brevissimum attenuatis, 35–50 $\mu$  (usque ad 80 $\mu$ ) crassis, cellulis 4–6-stratosis, duobus mediis multo majoribus quam corticalibus; cellulis corticalibus parietibus tenuibus, superficie 4–5-angulatis, 18–22 $\mu$  diam., chlorophoras parietales, discoideas aut parvo-taeniatus includentibus; cellulis medullaribus parietibus tenuibus, arete adhaerantibus longioribus latoribusque quam crassis chlorophoras paucas discoideas includentibus; zoosporangiis numerosis, inter gametangia supra superficies utras frondium sparsis; gametangiis numerosissimis, iterum dense positae iterumque sine ordine sparsae; pilis exsertis delicatissimis, paucis aggregatis, mox deciduis.

Growing on *Phyllospadix*. Pacific Grove, California. Type, Gardner, no. 4749a (Herb. Univ. Calif. no. 229727). June.

As far as is known at present, this species does not seem to be abundant or widely distributed. The plants are small and fruit very abundantly.

***Punctaria expansa* sp. nov.**

Frondebis gregariis, late expansis, plus minusve orbicularibus, 20–30 cm. latis, 100–130 $\mu$  crassis, fragilissimis, moderate fuscis, in aere viridescens; cellulis vulgo 4-stratosis, cellulis medullaribus multo majoribus, cellulis non definite in seriebus ordinatis; cellulis corticalibus 4–6-angulatis, superficie 30–40 $\mu$  diam.; zoosporangiis gametangiisque in fronde eodem positis, zoosporangiis non supra superficiem sed gametangiis plus minusve conicis et dimidio longitudinis suae projicientibus; pilis adeuntibus sed sparsis.

Growing on rocks in a small, quiet cove, at the head of Penn's Cove, Whidbey Island, Washington. Type, Gardner, no. 190 (Herb. Univ. Calif., no. 99457).

This is the largest species of *Punctaria* growing on our coast, and, on account of its size and distinctive structure, is a very marked species.

***Meneghiniella* gen. nov.**

Frondes cylindratae, plus minusve copiose ramosae, flaccidae et lubricae, e cellulis basalibus capilli terminalis oriendae; contextis medullaribus filamentis numerosis hyalinis dense coalescentibus et filamenta corticalia copiosa, brevia, vulgo arcuata, colorata, quorum ramellis infernis in gametangiis linearibus, plurilocularibus, loculis prope uniseriatis, vulgo fasciculatis transformatis, emittentibus; zoosporangiis incertis.

***Meneghiniella Brandegeei* sp. nov.**

Frondebis gracilibus, mollibus, 8–16 cm. altis, usque ad 600 $\mu$  diam., irregulariter et alterne ramosis, ramis patentibus; filamentis medullaribus cellulis latis usque ad 100 $\mu$  diam., parietibus tenuibus, arcuatis agglutinatis, externe diametro diminuendis, compositis; filamentis corticatis simplicibus, clavatis, liberis, haud compactis, plus minusve arcuatis, 7–10 cellulis moniliformibus compositis; gametangiis fasciculatis, loculis vulgo uniseriatis, 40–50 $\mu$  longis, 7–10 $\mu$  crassis; zoosporangiis ignotis.

Habitat unknown. La Paz, Lower California.

Consequent upon the establishment of the new genus *Meneghiniella*, we are here proposing the following new combinations:

***Meneghiniella Posidoniae* (Menegh.) comb. nov.**

*Liebmannia Posidoniae* Meneghini, Alg. Ital., 1843, Fasc. 4, p. 300, pl. 5, fig. 1.

**Meneghiniella zostericola** (J. Ag.) comb. nov.

*Cladosiphon zostericola* J. G. Agardh, Till. Alg. Syst., II, 1882, p. 43, pl. 2, figs. 3a, 3b.

**Meneghiniella erythraea** (J. Ag.) comb. nov.

*Cladosiphon<sup>1</sup> erythraeus* J. G. Agardh, Sp. Alg., 1848, p. 55.

**Heterochordaria** gen. nov.

Frondes primariae cylindraceae, primo solidae, deinde caevae et aliquando lente tumidae, non furcatae sed ramulis longioribus brevioribusve subcylindraceis aut lente complanatis dense vestitis, paucae aut multae e thallo tenui, prostrato, dense ramoso lobato, ad saxa arete adhaerente oriendae; cellulis internis parenchymatoideis, hyalinis, externis parvis, coloratis, in filamentis curtis antielinis ordinatis; zoosporangiis e basibus filamentorum antielinorum oriendis, unilocularibus; gametangiis per transformatione inferiorum duotertiorum filamentorum corticalium plurilocularibus.

**Heterochordaria abietina** (Rupr.) comb. nov.

*Chordaria abietina* Ruprecht, MS, in Farlow, List Mar. Alg. U. S., 1876, p. 357; J. Agardh, Till. Alg. Syst., part 2, 1882, p. 74, pl. 3, figs. 2a, 2b; Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 281; Tilden, Amer. Alg. (Exsicc.), no. 348; Farlow, Anderson and Eaton, Alg. Exsicc. Amer.-Bor., no. 94.

**Desmarestia pacifica** sp. nov.

Frondebis inferne lente compressis, superne teretibus, ramis totaliter oppositis, gradatim et successive magnitudine decrescentibus, subterminalibus 5-8 cm. longis, versus apicem minime alternatis, ramulis multis, plerumque oppositis, obtusisque indutis, ramulis ultimis 2-5 mm. longis; filamentis axialibus 40-50 $\mu$  diam., stratis duobus cellularum majorum cylindraceorum usque ad subcylindraceorum circumdatis; stratis corticalibus non definite delimitatis.

Habitat unknown. Santa Catalina Island, southern California. Type, Herb. Univ. Calif., no. 98913, collected by Mrs. H. D. Johnston in June.

**Meneghiniella zostericola** (J. Ag.) comb. nov.

*Cladosiphon zostericola* J. G. Agardh, Till. Alg. Syst., II, 1882, p. 43, pl. 2, figs. 3a, 3b.

**Meneghiniella erythraea** (J. Ag.) comb. nov.

*Cladosiphon erythraeus* J. G. Agardh, Sp. Alg., 1848, p. 55.

**Heterochordaria** gen. nov.

Frondes primariae cylindraceae, primo solidae, deinde caevae et aliquando lente tumidae, non furcatae sed ramulis longioribus brevioribusve subcylindraceis aut lente complanatis dense vestitis, paucae aut multae e thallo tenui, prostrato, dense ramoso lobatove, ad saxa arcte adhaerente oriendae; cellulis internis parenchymatoideis, hyalinis, externis parvis, coloratis, in filamentis curtis antelinis ordinatis; zoosporangiis e basibus filamentorum antelinorum oriendis, unilocularibus; gametangiis per transformatione inferiorum duotertiorum filamentorum corticalium plurilocularibus.

**Heterochordaria abietina** (Rupr.) comb. nov.

*Chordaria abietina* Ruprecht, MS, in Farlow, List Mar. Alg. U. S., 1876, p. 357; J. Agardh, Till. Alg. Syst., part 2, 1882, p. 74, pl. 3, figs. 2a, 2b; Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 281; Tilden, Amer. Alg. (Exsicc.), no. 348; Farlow, Anderson and Eaton, Alg. Exsicc. Amer.-Bor., no. 94.

**Desmarestia pacifica** sp. nov.

Frondebis inferne lente compressis, superne teretis, ramis totaliter oppositis, gradatim et successive magnitudine decrescentibus, subterminalibus 5-8 cm. longis, versus apicem minime alternatis, ramulis multis, plerumque oppositis, obtusisque indutis, ramulis ultimis 2-5 mm. longis; filamentis axialibus 40-50 $\mu$  diam., stratis duobus cellularum majorum cylindraceorum usque ad subcylindraceorum circumdatis; stratis corticalibus non definite delimitatis.

Habitat unknown. Santa Catalina Island, southern California. Type, Herb. Univ. Calif., no. 98913, collected by Mrs. H. D. Johnston in June.

***Punctaria expansa* sp. nov.**

Frondebis gregariis, late expansis, plus minusve orbicularibus, 20–30 cm. latis, 100–130 $\mu$  crassis, fragilissimis, moderate fuscis, in aere viridescens; cellulis vulgo 4-stratis, cellulis medullaribus multo majoribus, cellulis non definite in seriebus ordinatis; cellulis corticalibus 4–6-angulatis, superficie 30–40 $\mu$  diam.; zoosporangiis gametangiisque in fronde eodem positis, zoosporangiis non supra superficiem sed gametangiis plus minusve conicis et dimidio longitudinis suae projicientibus; pilis adeuntibus sed sparsis.

Growing on rocks in a small, quiet cove, at the head of Penn's Cove, Whidbey Island, Washington. Type, Gardner, no. 190 (Herb. Univ. Calif., no. 99457).

This is the largest species of *Punctaria* growing on our coast, and, on account of its size and distinctive structure, is a very marked species.

***Meneghiniella* gen. nov.**

Frondes cylindraceae, plus minusve copiose ramosae, flaccidae et lubricae, e cellulis basalibus capilli terminalis oriendae; contextis medullaribus filamentis numerosis hyalinis dense coalescentibus et filamenta corticalia copiosa, brevia, vulgo arcuata, colorata, quorum ramellis infernis in gametangiis linearibus, plurilocularibus, loculis prope uniseriatis, vulgo fasciculatis transformatis, emittentibus; zoosporangiis incertis.

***Meneghiniella Brandegeei* sp. nov.**

Frondebis gracilibus, mollibus, 8–16 cm. altis, usque ad 600 $\mu$  diam., irregulariter et alterne ramosis, ramis patentibus; filamentis medullaribus cellulis latis usque ad 100 $\mu$  diam., parietibus tenuibus, arete agglutinatis, externe diametro diminuendis, compositis; filamentis corticatis simplicibus, clavatis, liberis, haud compactis, plus minusve arcuatis, 7–10 cellulis moniliformibus compositis; gametangiis fasciculatis, loculis vulgo uniseriatis, 40–50 $\mu$  longis, 7–10 $\mu$  crassis; zoosporangiis ignotis.

Habitat unknown. La Paz, Lower California.

Consequent upon the establishment of the new genus *Meneghiniella*, we are here proposing the following new combinations:

***Meneghiniella Posidoniae* (Menegh.) comb. nov.**

*Liebmannia Posidoniae* Meneghini, Alg. Ital., 1843, Fasc. 4, p. 300, pl. 5, fig. 1.



***Desmarestia farcta* sp. nov.**

Frondebis totaliter cylindraceis, 5 aut pluribus dm. altis, ramis longis, totaliter oppositis, non apice attenuatis, obtusis, 3-4-ordinatis, 0.5-1 mm. diam.; stipitibus et discis (?) basalibus adhuc ignotis; cylindro primario cellulis cylindraceis 35-45 $\mu$  diam. composito in centro "stelae" distinctae 3-4 stratorum cellularum majorum cylindracearum 35-45 $\mu$  diam. posito et ea 2-3 stratis cellularum magnarum forma irregularum et 100-125 $\mu$  diam. circumdata; cellulis corticalibus coloratis et radiater elongatis; corporibus reproductivis et pilis ignotis.

Growing in the sublittoral belt. Argyle, San Juan County, Washington. Type, Gardner, no. 2253 (Herb. Univ. Calif., no. 229730). July.

***Desmarestia munda* sp. nov.**

Frondebis per disco firmo parenchymatoideoque affixis, ligulatis comparate rigidis et coriaceis, usque ad 8 m. longis, 4-10 cm. latis, nitentibus et luteo-fuscis, maturitate sparse ramosis; costa in stipite et partibus inferioribus valde conspicua aut superne ut nervo indistincto ostendente; ramis vulgo 2-, sed partim 3-ordinatis, ramis maximis, prope basim oriendis et axem primariam aequantibus, aliquando latioribus quam axi primaria sed basim ad connectionem parvam cylindraceamque attenuatis, superne acuminatis aut rotundatis, marginibus ubique projectiones spinuliformes remotas cum angulis supernis rotundatis ostendentibus; stipitibus fere ad basim complanatis.

Growing principally upon rocks in the sublittoral belt. Puget Sound, Washington, to southern California (San Pedro).

*Desmarestia ligulata* var. *herbacea* Setchell and Gardner, Alg. N.W. Amer., 1903, p. 247; Tilden, Amer. Alg. (Exsicc.), no. 244; Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. LXXIX-A (not B).

***Desmarestia media* var. *tenuis* var. nov.**

Frondebis cylindraceis, totaliter opposite et copiose ramosis, 3-4 dm. altis, stipitibus 2-3 mm. diam., ramulis ultimis gracillimis flaccidisque, 200-250 $\mu$  diam.; filamentis axialibus cellularibus maximis, 100-125 $\mu$  diam., strato singulari cellularum magnarum hyalinarumque, inter filamentum axiale et cellulas parvas corticales positarum.

Growing on rocks in the upper sublittoral belt. Alaska (Juneau) to Washington (Puget Sound). Type, Herb. Univ. Calif., no. 98868.

**Chordaria gracilis** sp. nov.

Frondibus 2.5–3.5 dm. altis, dilute fuscis axem singulam primariam pereurrentemque 200–500 $\mu$  diam. ostendentibus, e disco orientibus; ramis primariis numerosis, curtis, per longitudinem totam axis primariae sparsis et alterne polystichis, usque ad 4 cm. longis, patentibus; ramis secundariis 3–6 mm. longis, patentibus; filamentis cellularum corticalium brevibus, 2–3-cellulatis, cellulis terminalibus subsphaericis; zoosporangiis adhuc ignotis.

Growing in abundance on stones. West shore of Amaknak Island, Unalaska, Alaska. Type, Setchell, no. 3275 (Herb. Univ. Calif., no. 98957).

**Chordaria disessa** sp. nov.

Frondibus disco parvo affixis, 15–25 cm. altis, usque ad 2 mm. crassis, moderate alterneque ramosis, vulgo ad ramificationem latioribus sed hic tumidis hic contractis, partibus vetustis fistulosis, olivaceo-fuscis, interne filamentis longitudinalibus medullaribus externe filamentis curtis assimilantibus corticalibus compositis; filamentis medullaribus cellulis magnis, hyalinis, dense compactis, crasse-parietalibus usque ad 120 $\mu$  diam. in centro frondis, multiplo longioribus quam crassis, prope peripheriam brevioribus angustioribusque, filamentis corticalibus erectis, cylindraceis, simplicibus aut ramosis, laxis, 4–6 $\mu$  diam., 2–4-cellulatis, cellulis terminalibus tumidis globosisque; pilis ignotis; ramis ordinum successorum magnitudine reductis, terminalibus longe attenuatis acutisque, angulis vulgo latis rotundatisque; zoosporangiis obovoideis usque ad ellipsoideis, 36–42 $\mu$  longis, 28–32 $\mu$  crassis; gametangiis adhuc ignotis.

Growing on eel grass in the middle and lower littoral belts. East Sound, Orcas Island, Washington. Type, Gardner, no. 566 (Herb. Univ. Calif., no. 99330).

*Castagnea divaricata* Setchell and Gardner, Alg. N.W. Amer., 1903, p. 249.

**Coilodesme corrugata** sp. nov.

Frondibus fragilibus et flaccidis, tota superficie dense rugulosis, 3–7 cm. longis, 8–14 mm. latis, 40–45 $\mu$  crassis, ad hostem per filamenta rhizoidea (penetrantia?) affixis, superne rotundatis, inferne in stipitem gracilem brevemque attenuatis, dilute fusciscentibus; contextis internis 2-stratosis, cellulis magnis, hyalinis, irregularibus compositis, corticalibus, 2–3-stratosis, cellulis parvis, angulatis, compositis; zoosporangiis forma irregularibus, vulgo latioribus quam longis.

Epiphytic upon *Cystoseira neglecta* S. and G. In the upper sublittoral belt. Santa Catalina Island, southern California. Type, Gardner, no. 2584 (Herb. Univ. Calif., no. 229731). May.

**Chordaria gracilis** sp. nov.

Frondebis 2.5–3.5 dm. altis, dilute fuseis axem singulam primariam pereurrentemque 200–500 $\mu$  diam. ostendentibus, e disco orientibus; ramis primariis numerosis, curtis, per longitudinem totam axis primariae sparsis et alterne polystichis, usque ad 4 cm. longis, patentibus; ramis secundariis 3–6 mm. longis, patentibus; filamentis cellularum corticalium brevibus, 2–3-cellulatis, cellulis terminalibus subsphaericis; zoosporangiis adhuc ignotis.

Growing in abundance on stones. West shore of Amaknak Island, Unalaska, Alaska. Type, Setchell, no. 3275 (Herb. Univ. Calif., no. 98957).

**Chordaria disessa** sp. nov.

Frondebis disco parvo affixis, 15–25 cm. altis, usque ad 2 mm. crassis, moderate alterneque ramosis, vulgo ad ramificationem latioribus sed hic tumidis hic contractis, partibus vetustis fistulosis, olivaceo-fuseis, interne filamentis longitudinalibus medullaribus externe filamentis curtis assimilantibus corticalibus compositis; filamentis medullaribus cellulis magnis, hyalinis, dense compactis, crasse-parietalibus usque ad 120 $\mu$  diam. in centro frondis, multo longioribus quam crassis, prope peripheriam brevioribus angustioribusque, filamentis corticalibus erectis, cylindraceis, simplicibus aut ramosis, laxis, 4–6 $\mu$  diam., 2–4-cellulatis, cellulis terminalibus tumidis globosisque; pilis ignotis; ramis ordinum successivorum magnitudine reductis, terminalibus longe attenuatis acutisque, angulis vulgo latis rotundatisque; zoosporangiis obovoideis usque ad ellipsoideis, 36–42 $\mu$  longis, 28–32 $\mu$  crassis; gametangiis adhuc ignotis.

Growing on eel grass in the middle and lower littoral belts. East Sound, Orcas Island, Washington. Type, Gardner, no. 566 (Herb. Univ. Calif., no. 99330).

*Castagnea divaricata* Setchell and Gardner, Alg. N.W. Amer., 1903, p. 249.

**Coilodesme corrugata** sp. nov.

Frondebis fragilibus et flaccidis, tota superficie dense rugulosis, 3–7 cm. longis, 8–14 mm. latis, 40–45 $\mu$  crassis, ad hostem per filamenta rhizoidea (penetrantia?) affixis, superne rotundatis, inferne in stipitem gracilem brevemque attenuatis, dilute fuscescentibus; contextis internis 2-stratosis, cellulis magnis, hyalinis, irregularibus compositis, corticalibus, 2–3-stratosis, cellulis parvis, angulatis, compositis; zoosporangiis forma irregularibus, vulgo latioribus quam longis.

Epiphytic upon *Cystoseira neglecta* S. and G. In the upper sublittoral belt. Santa Catalina Island, southern California. Type, Gardner, no. 2584 (Herb. Univ. Calif., no. 229731). May.

**Desmarestia farcta** sp. nov.

Frondebis totaliter cylindraceis, 5 aut pluribus dm. altis, ramis longis, totaliter oppositis, non apice attenuatis, obtusis, 3-4-ordinatis, 0.5-1 mm. diam.; stipitibus et discis (?) basalibus adhuc ignotis; cylindro primario cellulis cylindraceis 35-45 $\mu$  diam. composito in centro "stelae" distinctae 3-4 stratorum cellularum majorum cylindracearum 35-45 $\mu$  diam. posito et ea 2-3 stratis cellularum magnarum forma irregularum et 100-125 $\mu$  diam. circumdata; cellulis corticalibus coloratis et radiater elongatis; corporibus reproductivis et pilis ignotis.

Growing in the sublittoral belt. Argyle, San Juan County, Washington. Type, Gardner, no. 2253 (Herb. Univ. Calif., no. 229730). July.

**Desmarestia munda** sp. nov.

Frondebis per disco firmo parenchymatoideoque affixis, ligulatis comparate rigidis et coriaceis, usque ad 8 m. longis, 4-10 cm. latis, nitentibus et luteo-fuscis, maturitate sparse ramosis; costa in stipite et partibus inferioribus valde conspicua aut superne ut nervo indistincto ostendente; ramis vulgo 2-, sed partim 3-ordinatis, ramis maximis, prope basim oriendis et axem primariam aequantibus, aliquando latioribus quam axi primaria sed basim ad connectionem parvam cylindraceamque attenuatis, superne acuminatis aut rotundatis, marginibus ubique projectiones spinuliformes remotas cum angulis supernis rotundatis ostendentibus; stipitibus fere ad basim complanatis.

Growing principally upon rocks in the sublittoral belt. Puget Sound, Washington, to southern California (San Pedro).

*Desmarestia ligulata* var. *herbacea* Setchell and Gardner, Alg. N.W. Amer., 1903, p. 247; Tilden, Amer. Alg. (Exsicc.), no. 244; Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. LXXIX-A (not B).

**Desmarestia media** var. *tenuis* var. nov.

Frondebis cylindraceis, totaliter opposite et copiose ramosis, 3-4 dm. altis, stipitibus 2-3 mm. diam., ramulis ultimis gracillimis flaccidisque, 200-250 $\mu$  diam.; filamentis axialibus cellularibus maximis, 100-125 $\mu$  diam., strato singulari cellularum magnarum hyalinarumque, inter filamentum axiale et cellulas parvas corticales positarum.

Growing on rocks in the upper sublittoral belt. Alaska (Juneau) to Washington (Puget Sound). Type, Herb. Univ. Calif., no. 98868.

***Coilodesme polygnampta* sp. nov.**

Frondebis vulgo dense fasciculatis, 1-4 dm. altis, 1-5 cm. latis, moderate firmis, complanatis, marginibus maturitate undulatis crispatisque ad saxa per discum parvum, parenchymatoideum affixis, superne rotundatis obtusisque, inferne in stipitem proprium, eurtum, solidum, cylindraceum attenuatis, atro-rubro-fuscis; contextis interioribus 2-3-stratosis cellulis hyalinis, corticalibus 3-stratosis cellulis parvis, assimilantibus in seriebus antielinis ordinatis, compositis.

Growing on rocks in the lower littoral and upper sublittoral belts. Bering Sea. Type, Setchell, no. 3285 (Herb. Univ. Calif., no. 98779).

*Coilodesme bulligera* Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 923 (non Stroemfelt).

***Coilodesme rigida* sp. nov.**

Frondebis rigidis, plus minusve coriaceis, ex origine complanatis, glabris, marginibus incrassatis, prope basim in stipitem eurtum, crassum attenuatis, superne latis rotundatisque, 5-10 cm. (up to 25 cm.) altis, 1-1.5 cm. latis, 300-375 $\mu$  crassis, dilute fuseescentibus; contextis internis cellulis magnis, hyalinis, erasse parietalibus, filamentis numerosis parvioribus irregulariter in directionibus totis percurrentibus intermixtis compositis, versus superficies magnitudine decrescentibus, ad superficiem perpendicularibus, 2-3-chorono divisis et in seriebus cellularum parvarum corticalium antielinis terminantibus; zoosporangiis forma irregularibus, paucoplo longioribus quam latis.

Epiphytic upon *Halidrys dioica* Gardner, the base penetrating deeply into the host. Redondo to San Diego, southern California. Type, Gardner, no. 4937 (Herb. Univ. Calif., no. 229732). June.

***Coilodesme sitchensis* sp. nov.**

Frondebis tenuibus flaccidisque, inflatis, moderate undulatis, 15-25 cm. altis, 3-6 mm. latis, cylindricis usque ad lente clavatis, basim in stipitem gracilem, eurtum attenuatis, atro-rubro-fuscis, siccitate densiori-coloratis; contextis internis 2-stratosis, cellulis magnis, corticalibus 2-3-stratosis cellulis parvioribus, radiate elongatis, contextis binis cellulis chlorophoris compositis.

Growing on *Cystophyllum geminatum* (Ag.) J. Ag. Sitka, Alaska. Type, Gardner, no. 2235 (Herb. Univ. Calif., no. 229733). June.

**Phaeostrophion** gen. nov.

Fronde liguliformes, solidae, polystromaticae, plus minusve stipitatae, e disco parvo oriendae; contextis mediis cellulis elongatis, forma magnitudineque variabilibus, utroque latere in cellulas parviores parenchymatoideas transformatis, usque iterumque exterius in cellulas corticales trabeculiformes transformatis compositis; zoosporangiis usque ad latere frondis in cortice immersis ad superficiem sed non supra projicientibus; gametangiis pilisque ignotis.

**Phaeostrophion irregulare** sp. nov.

Frondeb linearibus usque ad lineari-spatulatis, frequenter multo distortis et irregulariter incisus lobatisve, 15–25 cm. (usque ad 40 cm.) altis, 1.5–4 cm. latis, basi longe et gradatim ad discum basale ultimo gracillima attenuatis; zoosporangiis numerosis, elongato-polygoniis usque ad regulariter ellipsoideis, 38–44 $\mu$  longis, 26–34 $\mu$  latis; gametangiis pilisque ignotis.

Growing on rocks in tide pools in the middle of the littoral belt. Mouth of Coos Bay, Oregon, and Bolinas Bay, California.

Type, Gardner, no. 4582 (Herb. Univ. Calif., no. 229734). May.

**Dictyosiphon tenuis** sp. nov.

Frondeb fragilissimis et totaliter flaccidis, 5–10 cm. longis, axi primaria percurrente et 225–250 $\mu$  diam., ramis oppositis, 3–4-seriebus compositis, flagelliformibus; ramulis ultimis obtusis, 40–50 $\mu$  diam.; zoosporangiis sparsis, in contextis corticalibus totaliter immersis.

Habitat unknown. Golofin Bay, Alaska. Type, Setchell, no. 5670 (Herb. Univ. Calif., no. 229735).

**Laminaria personata** sp. nov.

Frondeb luteo-fuscis, 4–6 dm. altis, disco amplo, parenchymatoideo affixis, laminis planis, inferne late cuneatis, 12–20 cm. latis, lacunas muciferas comparate sparsas, in cortice externo ostendentibus; stipitibus 8–12 cm. longis, 4–5 mm. crassis, inferne teretibus, versus laminam complanatis, lacunis muciferis destitutis.

Growing on rocks in the upper sublittoral belt. Alaska [Yakutat Bay, Kukak Bay and Popof Island (Saunders), Sitka (Gardner)]. Type, Gardner, no. 3951 (Herb. Univ. Calif., no. 229736). July.

**Phaeostrophion** gen. nov.

Frondes liguliformes, solidae, polystromaticae, plus minusve stipitatae, e disco parvo oriendae; contextis mediis cellulis elongatis, forma magnitudineque variabilibus, utroque latere in cellulas parviores parenchymatoideas transformatis, usque iterumque exterius in cellulas corticales trabeculiformes transformatis compositis; zoosporangiis usque ad regulariter ellipsoideis, 38–44 $\mu$  longis, 26–34 $\mu$  latis; gametangiis pilisque ignotis.

**Phaeostrophion irregulare** sp. nov.

Frondebis linearibus usque ad lineari-spatulatis, frequenter multo distortis et irregulariter incisus lobatisve, 15–25 cm. (usque ad 40 cm.) altis, 1.5–4 cm. latis, basi longe et gradatim ad discum basale ultimo gracillima attenuatis; zoosporangiis numerosis, elongato-polygoniis usque ad regulariter ellipsoideis, 38–44 $\mu$  longis, 26–34 $\mu$  latis; gametangiis pilisque ignotis.

Growing on rocks in tide pools in the middle of the littoral belt. Mouth of Coos Bay, Oregon, and Bolinas Bay, California.

Type, Gardner, no. 4582 (Herb. Univ. Calif., no. 229734). May.

**Dictyosiphon tenuis** sp. nov.

Frondebis fragilissimis et totaliter flaccidis, 5–10 cm. longis, axi primaria percurrente et 225–250 $\mu$  diam., ramis oppositis, 3–4-seriebus compositis, flagelliformibus; ramulis ultimis obtusis, 40–50 $\mu$  diam.; zoosporangiis sparsis, in contextis corticalibus totaliter immersis.

Habitat unknown. Golofin Bay, Alaska. Type, Setchell, no. 5670 (Herb. Univ. Calif., no. 229735).

**Laminaria personata** sp. nov.

Frondebis luteo-fuscis, 4–6 dm. altis, disco amplo, parenchymatoideo affixis, laminis planis, inferne late cuneatis, 12–20 cm. latis, lacunas muciferas comparate sparsas, in cortice externo ostendentibus; stipitibus 8–12 cm. longis, 4–5 mm. crassis, inferne teretibus, versus laminam complanatis, lacunis muciferis destitutis.

Growing on rocks in the upper sublittoral belt. Alaska [Yakutat Bay, Kukak Bay and Popof Island (Saunders), Sitka (Gardner)]. Type, Gardner, no. 3951 (Herb. Univ. Calif., no. 229736). July.

**Coilodesme polygnampta** sp. nov.

Frondebis vulgo dense fasciculatis, 1-4 dm. altis, 1-5 cm. latis, moderate firmis, complanatis, marginibus maturitate undulatis crispatisque ad saxa per discum parvum, parenchymatoideum affixis, superne rotundatis obtusisque, inferne in stipitem proprium, curtum, solidum, cylindraceum attenuatis, atro-rubro-fuscis; contextis interioribus 2-3-stratosis cellulis hyalinis, corticalibus 3-stratosis cellulis parvis, assimilantibus in seriebus antielinis ordinatis, compositis.

Growing on rocks in the lower littoral and upper sublittoral belts. Bering Sea. Type, Setchell, no. 3285 (Herb. Univ. Calif., no. 98779).

*Coilodesme bulligera* Collins, Holden and Setchell, *Phyc. Bor.-Amer.* (Exsicc.), no. 923 (non Stroemfelt).

**Coilodesme rigida** sp. nov.

Frondebis rigidis, plus minusve coriaceis, ex origine complanatis, glabris, marginibus incrassatis, prope basim in stipitem curtum, crassum attenuatis, superne latis rotundatisque, 5-10 cm. (up to 25 cm.) altis, 1-1.5 cm. latis, 300-375 $\mu$  crassis, dilute fusciscentibus; contextis internis cellulis magnis, hyalinis, crasse parietalibus, filamentis numerosis parvioribus irregulariter in directionibus totis percurrentibus intermixtis compositis, versus superficies magnitudine decrescentibus, ad superficiem perpendicularibus, 2-3-choromo divisus et in seriebus cellularum parvarum corticalium antielinis terminantibus; zoosporangiis forma irregularibus, paucoplo longioribus quam latis.

Epiphytic upon *Halidrys dioica* Gardner, the base penetrating deeply into the host. Redondo to San Diego, southern California. Type, Gardner, no. 4937 (Herb. Univ. Calif., no. 229732). June.

**Coilodesme sitchensis** sp. nov.

Frondebis tenuibus flaccidisque, inflatis, moderate undulatis, 15-25 cm. altis, 3-6 mm. latis, cylindricis usque ad lente clavatis, basim in stipitem gracilem, curtum attenuatis, atro-rubro-fuscis, siccitate densiori-coloratis; contextis internis 2-stratosis, cellulis magnis, corticalibus 2-3-stratosis cellulis parvioribus, radiate elongatis, contextis binis cellulis chlorophoris compositis.

Growing on *Cystophyllum geminatum* (Ag.) J. Ag. Sitka, Alaska. Type, Gardner, no. 2235 (Herb. Univ. Calif., no. 229733). June.



**Clanidophora abyssicola** sp. nov.

Frondebis 2-3 cm. altis, maturitate segmentis numerosis et late flabellatis compositis, stipitibus spuriis gracilibus, pro parte polystromaticis, lamina primaria angustaque utroque lateri pilis numerosissimis, gracilibus, arcte adpressis et multicellularibus, basi supra substratum dispersis et haptera efficientibus induta; cellulis 1-3, posterioribus a marginibus, horizontaliter dividendis, substantiam frondium primariarum 2-stratosarum efficientibus, stratis marginalibus monostromaticis, a superficie rectangularibus, 16-24 $\mu$  longis, 10-12 $\mu$  latis, cellulis marginalibus, 30-50 $\mu$  longis, chlorophoris numerosis, parvis et sphericis impletis; sporangiis pyriformibus usque ad ellipsoideis, 32-38 $\mu$  longis, 28-32 $\mu$  crassis; aplanosporis (?) 4-5 $\mu$  diam., in sporangiis numerosis; paraphysibus clavatis, 4-7-cellulatis.

Growing attached to shells of mollusks in 10-15 fathoms. Griffin Bay, San Juan Island, Washington. Type, Gardner, no. 2385 (Herb. Univ. Calif., no. 229737). July.

**Zonaria Farlowii** sp. nov.

Frondebis 8-12 cm. longis, copiose et plus minusve flabellato ramosis, lobis terminalibus flabellatis, alis aliquando in segmenta numerosa, angusta et acuta, fissis, partibus inferis stipitem crasse incrassatum formantibus, aetate provecta maxime stuposis; cellulis marginalibus meristematis maximis, contentibus cellularibus dense faretis; medulla 6-9-cellulato-stratosa, cellulis parallelopipedoniis, chlorophoris sparsis; aplanosporiis in soris ordinatis, forma magnitudine variabilibus, utroque superficie frondium sine ordine sparsis, sub cuticula paraphysibus numerosis multicellularibusque comitatis formatis, aetate provecta cuticulam frangentibus et dispergentibus; paraphysibus clavatis, 5-7-cellulatis; pilis in fasciculis parvis liberisque aut in zonis transversalibus ordinatis.

Growing on rocks in the upper sublittoral and in the lower littoral belts. Southern California (Santa Barbara to San Diego).

*Zonaria Tournefortii* Farlow, in Farlow, Anderson and Eaton, Alg. Exsicc. Amer-Bor., 1878, no. 91.

**Ralfsia fungiformis** (Gunn.) comb. nov.

*Fucus fungiformis* Gunnerus, Fl. Norv., II, 1772, p. 107.

**Ægira virescens** (Carm.) comb. nov.

*Mesogloia virescens* Carmichael, in Hooker, Brit. Flor., vol. 2, 1833, p. 387.

**Microspongium Saundersii** nom. nov.

*Hapalospongidion gelatinosum* Saunders. New and little known brown algae, 1899, p. 37, pl. 1, figs. 1-4.

**Petrospongium rugosum** (Okamura) comb. nov.

*Cylindrocarpus rugosa* Okamura, Alg. Japon. (Exsicc.), 1903, no. 88.

**Gobia simplex** (Saunders) comb. nov.

*Mesogloia simplex* Saunders, Alg. Harriman Exp., 1901, p. 423, pl. 50, figs. 2-4.

**Dictyota flabellata** (Collins) comb. nov.

*Dilophus flabellatus* Collins in Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 834.

**Punctaria lobata** (Saunders) comb. nov.

*Homoeostroma lobatum* Saunders, Alg. Harriman Exp., 1901, p. 420, pl. 46, fig. 6.

**Myriogloia callitricha** (Rosenv.) comb. nov.

*Myriocladia callitricha* Rosenvinge, Groenl. Havalg, 1893, p. 885, pl. 1, figs. 3, 4.

**Myriogloia capensis** (J. G. Ag.) comb. nov.

*Myriocladia capensis* J. G. Agardh, Sp. Alg., vol. 1, 1848, p. 54.

**Ilea Fascia f. typica** comb. nov.

*Fucus Fascia* Mueller, Fl. Dan., 1778, pl. 768. The plants distributed in Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 1131, are fairly representative of the typical form. It extends along the coast from Puget Sound, Washington, to southern California.

**Ilea Fascia f. debilis** (Ag.) comb. nov.

*Laminaria debilis* Agardh, Sp. Alg., vol. 1, 1820, p. 120. We have a few specimens representative of this form from San Juan Island, Washington. They measure up to twelve centimeters wide and twenty-five centimeters long.

**Microspongium Saundersii** nom. nov.

*Hapalospongidion gelatinosum* Saunders. New and little known brown algae, 1899, p. 37, pl. 1, figs. 1-4.

**Petrospongium rugosum** (Okamura) comb. nov.

*Cylindrocarpus rugosa* Okamura, Alg. Japon. (Exsicc.), 1903, no. 88.

**Gobia simplex** (Saunders) comb. nov.

*Mesogloia simplex* Saunders, Alg. Harriman Exp., 1901, p. 423, pl. 50, figs. 2-4.

**Dictyota flabellata** (Collins) comb. nov.

*Dilophus flabellatus* Collins in Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 834.

**Punctaria lobata** (Saunders) comb. nov.

*Homoeostroma lobatum* Saunders, Alg. Harriman Exp., 1901, p. 420, pl. 46, fig. 6.

**Myriogloia callitricha** (Rosenv.) comb. nov.

*Myriocladia callitricha* Rosenvinge, Groenl. Havalg, 1893, p. 885, pl. 1, figs. 3, 4.

**Myriogloia capensis** (J. G. Ag.) comb. nov.

*Myriocladia capensis* J. G. Agardh, Sp. Alg., vol. 1, 1848, p. 54.

**Ilea Fascia f. typica** comb. nov.

*Fucus Fascia* Mueller, Fl. Dan., 1778, pl. 768. The plants distributed in Collins, Holden and Setchell, Phyc. Bor.-Amer. (Exsicc.), no. 1131, are fairly representative of the typical form. It extends along the coast from Puget Sound, Washington, to southern California.

**Ilea Fascia f. debilis** (Ag.) comb. nov.

*Laminaria debilis* Agardh, Sp. Alg., vol. 1, 1820, p. 120. We have a few specimens representative of this form from San Juan Island, Washington. They measure up to twelve centimeters wide and twenty-five centimeters long.

**Clanidophora abyssicola** sp. nov.

Frondebis 2-3 cm. altis, maturitate segmentis numerosis et late flabellatis compositis, stipitibus spuriiis gracilibus, pro parte polystromaticis, lamina primaria angustaque utroque lateri pilis numerosissimis, gracilibus, arete adpressis et multicellularibus, basi supra substratum dispersis et haptera efficientibus induta; cellulis 1-3, posterioribus a marginibus, horizontaliter dividendis, substantiam frondium primariorum 2-stratosarum efficientibus, stratis marginalibus monostromaticis, a superficie rectangularibus, 16-24 $\mu$  longis, 10-12 $\mu$  latis, cellulis marginalibus, 30-50 $\mu$  longis, chlorophoris numerosis, parvis et sphericis impletis; sporangiis pyriformibus usque ad ellipsoideis, 32-38 $\mu$  longis, 28-32 $\mu$  crassis; aplanosporis (?) 4-5 $\mu$  diam., in sporangiis numerosis; paraphysibus clavatis, 4-7-cellulatis.

Growing attached to shells of mollusks in 10-15 fathoms. Griffin Bay, San Juan Island, Washington. Type, Gardner, no. 2385 (Herb. Univ. Calif., no. 229737). July.

**Zonaria Farlowii** sp. nov.

Frondebis 8-12 cm. longis, copiose et plus minusve flabellato ramosis, lobis terminalibus flabellatis, alis aliquando in segmenta numerosa, angusta et acuta, fissis, partibus inferis stipitem crasse incrassatum formantibus, aetate proevecta maxime stuposis; cellulis marginalibus meristematicis maximis, contentibus cellularibus dense faretis; medulla 6-9-cellulato-stratosa, cellulis parallelopipedoniis, chlorophoris sparsis; aplanosporiis in soris ordinatis, forma magnitudine variabilibus, utroque superficie frondium sine ordine sparsis, sub cuticula paraphysibus numerosis multicellularibusque comitatis formati, aetate proevecta cuticulam frangentibus et dispergentibus; paraphysibus clavatis, 5-7-cellulatis; pilis in fasciculis parvis liberis aut in zonis transversalibus ordinatis.

Growing on rocks in the upper sublittoral and in the lower littoral belts. Southern California (Santa Barbara to San Diego).

*Zonaria Tournefortii* Farlow, in Farlow, Anderson and Eaton, Alg. Exsicc. Amer-Bor., 1878, no. 91.

**Ralfsia fungiformis** (Gunn.) comb. nov.

*Fucus fungiformis* Gunnerus, Fl. Norv., II, 1772, p. 107.

**Ægira virescens** (Carm.) comb. nov.

*Mesogloia virescens* Carmichael, in Hooker, Brit. Flor., vol. 2, 1833, p. 387.

**Ilea Fascia f. caespitosa** (J. Ag.) comb. nov.

*Laminaria caespitosa* J. G. Agardh, Spec. Alg., vol. I, 1848, p. 130, is well illustrated in Thuret and Bornet, Etudes Phyc., 1878, pl. 4. The plants distributed in Collins, Holden and Setchell, Phyc. Bor.-Amer., no. 736, may be considered to represent this form. It is known only in the extreme northern portion of our region.

**Ilea Fascia f. zosterifolia** (Reinke) comb. nov.

*Phyllitis zosterifolia* Reinke, Algenfl. Westl. Ostsee, 1889, p. 61. This form has been detected in but a single locality on our coast, viz., Pebble Beach, Carmel Bay, Monterey County, California.

**Ilea Fascia f. filiformis** (Batters) comb. nov.

*Phyllitis filiformis* Batters, in Linn. Soc. Journ. Bot., vol. 24, 1888, p. 451, pl. 18, figs. 1-6. This form has not been detected on our coast.





**Ilea Fascia f. caespitosa** (J. Ag.) comb. nov.

*Laminaria caespitosa* J. G. Agardh, Spec. Alg., vol. I, 1848, p. 130, is well illustrated in Thuret and Bornet, Etudes Phyc., 1878, pl. 4. The plants distributed in Collins, Holden and Setchell, Phyc. Bor.-Amer., no. 736, may be considered to represent this form. It is known only in the extreme northern portion of our region.

**Ilea Fascia f. zosterifolia** (Reinke) comb. nov.

*Phyllitis zosterifolia* Reinke, Algenfl. Westl. Ostsee, 1889, p. 61. This form has been detected in but a single locality on our coast, viz., Pebble Beach, Carmel Bay, Monterey County, California.

**Ilea Fascia f. filiformis** (Batters) comb. nov.

*Phyllitis filiformis* Batters, in Linn. Soc. Journ. Bot., vol. 24, 1888, p. 451, pl. 18, figs. 1-6. This form has not been detected on our coast.



PHYCOLOGICAL CONTRIBUTIONS, VII

BY

WILLIAM ALBERT SETCHELL

AND

NATHANIEL LYON GARDNER

UNIVERSITY OF CALIFORNIA PUBLICATIONS IN BOTANY

Vol. 13, No. 1, pp. 1-13

Issued October 27, 1924

THE UNIVERSITY OF CALIFORNIA PRESS  
BERKELEY, CALIFORNIA

---

THE CAMBRIDGE UNIVERSITY PRESS  
FETTER LANE, LONDON, E. C., 4  
ENGLAND

UNIVERSITY OF CALIFORNIA PUBLICATIONS—(Continued)

Vol. 6. 1914-1919.

1. Parasitic Florideae, by William Albert Setchell. Pp. 1-34, plates 1-6. April, 1914 .....	.36
2. <i>Phytomorula regularis</i> , a Symmetrical Protophyte Related to <i>Coelastrum</i> , by Charles Atwood Kofoid. Pp. 35-40, plate 7. April, 1914 .....	.05
3. Variation in <i>Oenothera ovata</i> , by Katherine Layne Brandegee. Pp. 41-50, plates 8-9. June, 1914 .....	.10
4. Plantae Mexicanae Purpusianae. VI, by Townshend Stith Brandegee. Pp. 51-77. July, 1914 .....	.25
5. The <i>Scinaia</i> Assemblage, by William Albert Setchell. Pp. 79-152, plates 10-16. October, 1914 .....	.75
6. Notes on Pacific Coast Algae. I, <i>Pylaiella Postelsiae</i> , n. sp., a New Type in the Genus <i>Pylaiella</i> , by Carl Skottsberg. Pp. 153-164, plates 17-19. May, 1915 .....	.15
7. New and Noteworthy Californian Plants. II, by Harvey Monroe Hall. Pp. 165-176, plate 20. October, 1915 .....	.15
8. Plantae Mexicanae Purpusianae. VII, by Townshend Stith Brandegee. Pp. 177-197. October, 1915 .....	.25
9. Floral Relations among the Galapagos Islands, by A. L. Kroeber. Pp. 199-220. March, 1916 .....	.20
10. The Comparative Histology of Certain Californian Boletaceae, by Harry S. Yates. Pp. 221-274, plates 21-25. February, 1916 .....	.50
11. A Revision of the Tuberales of California, by Helen Margaret Gilkey. Pp. 275-356, plates 26-30. March, 1916 .....	.80
12. Species Novae vel Minus Cognitae, by T. S. Brandegee. Pp. 357-361. May, 1916 .....	.05
13. Plantae Mexicanae Purpusianae. VIII, by Townshend Stith Brandegee. Pp. 263-375. March, 1917 .....	.15
14. New Pacific Coast Marine Algae. I, by Nathaniel Lyon Gardner. Pp. 377-416, plates 31-35. June, 1917 .....	.40
15. An Account of the Mode of Foliar Abscission in <i>Citrus</i> , by Robert W. Hodgson. Pp. 417-428, 3 text figures. February, 1918 .....	.10
16. New Pacific Coast Marine Algae. II, by Nathaniel Lyon Gardner. Pp. 429-454, plates 36-37. July, 1918 .....	.25
17. New Pacific Coast Marine Algae. III, by Nathaniel Lyon Gardner. Pp. 455-486, plates 38-41. December, 1918 .....	.35
18. New Pacific Coast Marine Algae. IV, by Nathaniel Lyon Gardner. Pp. 487-496, plate 42. January, 1919 .....	.15
19. Plantae Mexicanae Purpusianae. IX, by Townshend Stith Brandegee. Pp. 497-504. November, 1919 .....	.05

Vol. 7. 1916-1922.

1. Notes on the Californian Species of <i>Trillium</i> L. I, A Report of the General Results of Field and Garden Studies, 1911-1916, by Thomas Harper Goodspeed and Robert Percy Brandt. Pp. 1-24, plates 1-4. October, 1916 .....	.25
2. Notes on the Californian Species of <i>Trillium</i> L. II, The Nature and Occurrence of Undeveloped Flowers, by Thomas Harper Goodspeed and Robert Percy Brandt. Pp. 25-38, plates 5-6. October, 1916 .....	.15
3. Notes on the Californian Species of <i>Trillium</i> L. III, Seasonal Changes in <i>Trillium</i> Species with Special Reference to the Reproductive Tissues, by Robert Percy Brandt. Pp. 39-68, plates 7-10. December, 1916 .....	.30
4. Notes on the Californian Species of <i>Trillium</i> L. IV, Teratological Variations of <i>Trillium sessile</i> var. <i>giganteum</i> H. & A., by Thomas Harper Goodspeed. Pp. 69-100, plates 11-17. January, 1917 .....	.30
5. A Preliminary List of the Uredinales of California, by Walter C. Blasdale. Pp. 101-157. August, 1919 .....	.50
6, 7, 8. A Rubber Plant Survey of Western North America. I. <i>Chrysothamnus nauseosus</i> and Its Varieties, by Harvey Monroe Hall. II. Chrysil, a New Rubber from <i>Chrysothamnus nauseosus</i> , by Harvey Monroe Hall and Thomas Harper Goodspeed. III. The Occurrence of Rubber in Certain West American Shrubs, by Harvey Monroe Hall and Thomas Harper Goodspeed. Pp. 159-278, plates 18-20, 8 figures in text. November, 1919. 1.25	

UNIVERSITY OF CALIFORNIA PUBLICATIONS—(Continued)

9. Phycological Contributions, I, by William Albert Setchell and Nathaniel Lyon Gardner. Pp. 279-324, plates 21-31. April, 1920 .....	50	
10. <i>Plantae Mexicanae Purpusianae</i> , X, by Townshend Stith Brandegee. Pp. 325-331. December, 1920 .....	10	
11. Phycological Contributions II to VI. New Species of: II. <i>Myrionema</i> ; III. <i>Componema</i> ; IV. <i>Hecatonema</i> ; V. <i>Pylajella</i> and <i>Streblonema</i> ; VI. <i>Ectocarpus</i> . By William Albert Setchell and Nathaniel Lyon Gardner. Pp. 333-426, plates 32-49. May, 1922 .....	150	
12. Notes on Pacific Coast Algae. II. On the Californian "Delesseria Quercifolia," by Carl Skottsberg. Pp. 427-436, plate 50. June, 1922 .....	25	
13. Undescribed plants mostly from Baja California, by Ivan Murray Johnston. Pp. 437-446. August, 1922 .....	25	
14. Morphology, Development, and Economic Aspects of <i>Schizophyllum commune</i> Fries, by Frederick Monroe Essig. Pp. 447-498, plates 51-61. August, 1922 .....	80	
Index in preparation.		
Vol. 8. 1919-.		
1. The Marine Algae of the Pacific Coast of North America. Part I. Myxophyceae, by William Albert Setchell and Nathaniel Lyon Gardner. Pp. 1-138, plates 1-8. November, 1919 .....	\$1.50	
2. The Marine Algae of the Pacific Coast of North America. Part II. Chlorophyceae, by William Albert Setchell and Nathaniel Lyon Gardner. Pp. 139-374, plates 9-33. July, 1920 .....	2.75	
Vol. 9. A Report upon the Boreal Flora of the Sierra Nevada of California, by Frank Jason Smiley. Pp. 1-423, plates 1-7. October, 1921 .....		5.00
Vol. 10. 1922-.		
1. The Genus <i>Fucus</i> on the Pacific Coast of North America, by Nathaniel Lyon Gardner. Pp. 1-180, plates 1-60. April, 1922 .....	2.25	
2. <i>Plantae Mexicanae Purpusianae</i> , XI, by Townshend Stith Brandegee. Pp. 181-188, 1 figure in text. November, 1922 .....	.15	
3. A Revision of the Californian Species of <i>Lotus</i> , by Alice M. Ottley. Pp. 189-305, plates 61-82, maps 1-10. September, 1923 .....	2.00	
4. Notes on a Collection of New Zealand Hepaticae, by William Henry Pearson. Pp. 307-370, plates 83-103.		
5. More New Zealand Hepaticae, by William Henry Pearson. Pp. 373-392, plates 104-109. Nos. 4 and 5 in one cover. June, 1923 .....	1.25	
6. Parasitic Florideae, II, by William Albert Setchell. Pp. 393-396.		
7. A Revision of the West North American Species of <i>Callophyllis</i> , by William Albert Setchell. Pp. 397-401. Nos. 6 and 7 in one cover. May, 1923 .....	.25	
8. <i>Plantae Mexicanae Purpusianae</i> , XII, by Townshend Stith Brandegee. Pp. 403-421. October, 1924 .....	.25	
9. New Species of Plants from Indo-China, by Elmer D. Merrill. Pp. 423-430. October, 1924 .....	.25	
Vol. 11. 1922-.		
1. Interspecific Hybridization in <i>Nicotiana</i> . I. On the Results of Backcrossing the F, <i>Sylvestris-Tabacum</i> Hybrids to <i>Sylvestris</i> , by Thomas Harper Goodspeed and Roy Elwood Clausen. Pp. 1-30. August, 1922 .....	.45	
Vol. 12. 1924-.		
1. Lichenes a W. A. Setchell et H. E. Parks in Insula Tahiti a 1922 Collecti, scripsit Edv. A. Vainio. Pp. 1-16. January, 1924 .....	.35	
2. Report upon a Collection of Ferns from Tahiti, by William R. Maxon. Pp. 17-44, plates 1-6. April, 1924 .....	.45	
3. Tahitian Mosses, Collected by W. A. Setchell and H. E. Parks; Determined by V. F. Brotherus. Pp. 45-48. September, 1924 .....	.25	
Vol. 13. 1924-.		
1. Phycological Contributions, VII, by William Albert Setchell and Nathaniel Lyon Gardner. Pp. 1-13. October, 1924 .....	.25	